

# 60W Laser Machine



(Shown without rolling stand, optional)



## 1. Introduction

### 1. Safety introduction

The laser machine described here is a Class IV laser device and is dangerous. The laser will instantly ignite clothing, wood, paper, plastics, and many other common items and will Seriously Burn Flesh, Including Eyes. Care must be taken to avoid Serious Injury and/or Blindness. Always operate this and any other high power laser in an environment free of flammable materials, children, pets, spectators, etc. Always use Infrared Eye Protection Goggles when operating this laser. Failure to do so, may result in Permanent Blindness. This laser uses Lethal High Voltages. Care must be taken when working with the high voltage. Failure to do so may result in Serious Injury or Death. **Builder and/or User Assumes All Risks!**

By assembling this laser kit, or by using the information contained in this manual to build, repair, or otherwise work with lasers or other high voltage devices of any kind, **You Do So At Your Own Risk.**

### 1.2 What else is needed?

One large water bucket or CW-3000 water cooler (sold separately).

A single stranded 12ga. copper wire, used for grounding. (the ground terminal on the back or side of machine)

You will need a laptop or computer with at least 512MB RAM, a keyboard, and mouse and an open USB port. Windows XP operating system or greater required. Mac not supported at this time.

110V power source

Class IV laser glasses **(STRONGLY ADVISED)**

### 1.3 Technical

This laser engraver makes use of the high-energy laser beam focused on the surface of the work piece, and gasifies the work piece material in order to cut the work piece successfully. The numeral control worktable can cut the work piece to the designed shape.

## 1.4 Unpacking/setup of the machine

Upon unpacking the machine, you will receive:

- Machine enclosure
- Laser tube
- Plastic container w/ accessories
  - Software disc & keys
- Air pump
- Exhaust fan w/ 4" exhaust tubes
- Honeycomb table
- Rolling stand (**optional**)

The machine comes wrapped in plastic with a thin layer of oil to reduce rusting. Please thoroughly wipe down machine and remove any oil. As you open the lid to the machine you will notice the three belts will be zip tied. This ensures everything stays in place in transport. There will also be some grease on the rails. Please wipe most of the grease off, leaving some grease on the rails for the bearings to ride on.

Locate a level area to place the machine. Pay attention to possible exhaust tube routes to the outside. If the supplied exhaust tubing does not reach to the outside, you can use any 4" HVAC ducting from your local hardware store.

Once you have machine in its permanent spot, you can go ahead and install the laser tube. (Please refer to the 'installation of laser tube.pdf')

Next locate an area and place your water bucket/cooler. Attach the water lines.

Locate an area for your air compressor. Attach the air line. Keep in mind the air compressor does vibrate, so placing it on a concrete floor will help dampen the vibrations.

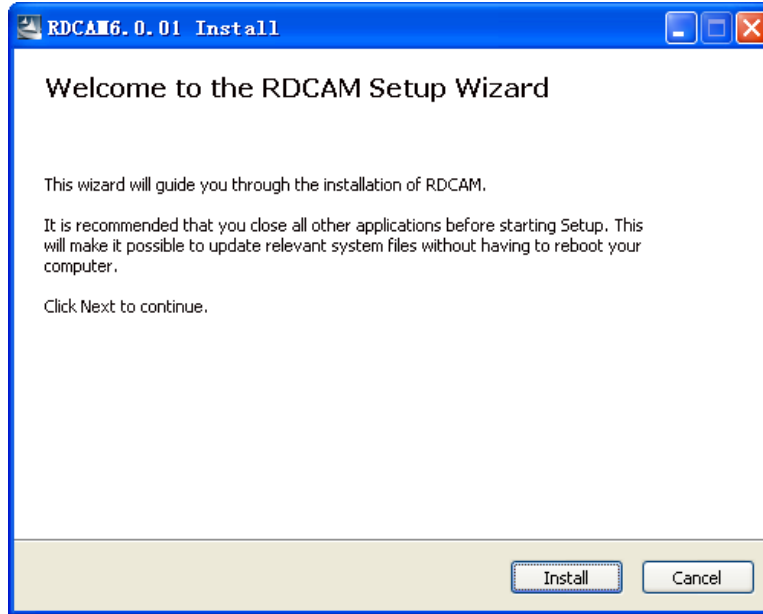
Finally run your exhaust system.

### 3. Software Installation

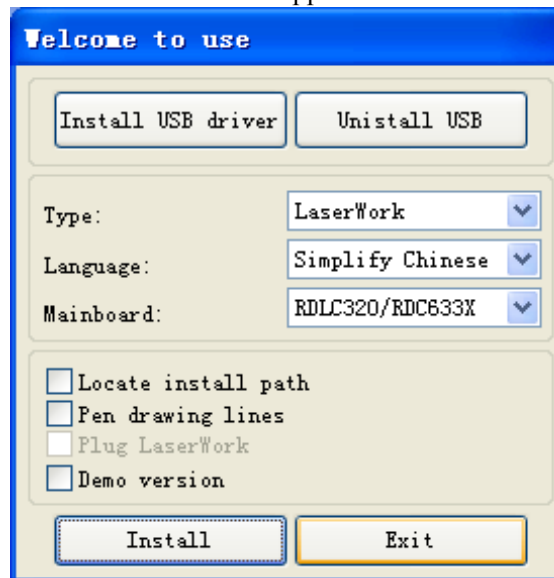
## Chapter 1 Software installation

### 1.1 Install steps

- (1) Double-click the RDCAMSetup.exe under the installation directory, the following dialog box appears:



- (2) Click **【Install】**, the installation main interface appears:



## 1.2 Installation settings

The installer can choose different installation content.

- 1> Install/Uninstall USB driver , reference 《Install USB driver》
- 2> According to the different customer application needs and the habit of using to select the type of software
  - a. Stand-alone software LaserWork.
  - b. The software that plug-ins to CorelDraw. Support the version from Coreldraw11 to X5.
  - c. The software that plug-ins to AutoCad. Support the version from 2004 to 2010.
  - d. The software that plug-ins to Cadian.
  - e. The software that plug-ins to Illustrator.
- 3> Choose a different installation languages  
At present, it support Simplified Chinese, Traditional Chinese, English and the custom language type.
- 4> Select the software matches the motherboard  
The software can support three kind of motherboards:RDLC430、 RDLC320、 RDC633X.  
  
Both RDLC320 and RDC633X are compatible, but RDLC430 is different. So, please choose the corresponding software with motherboard. Otherwise, it does not work.
- 5> Locate install path  
When install the LaserWork, default install path is “C:\”, for change the install path, check this option.  
  
When install the plug software RDPlug, under normal circumstances, the install program will locate to the target software automatically. If the installer does not locate to the target software automatically, you need to check this option, and locate to the target software manually.
- 6> Pen drawing lines  
This option is only applicable to a particular machine, which has the function of the chalk line, **ordinary machines do not need to check this.**
- 7> Plug laserwork  
The installer default install a special plug-ins RDPlug, if the users are more accustomed to using LaserWork program ,can check this.
- 8> Demo version installation  
According to the type of software installation, the installation language, the choice of motherboard generate different versions of the DEMO Software.

## 1.3 Installation

Choose the type of software, installation language and the appropriate motherboard. Click **【Install】** to install the software. After installation is complete, the following dialog box appears to prompt the user that the software has been installed successfully.



## 1.4 Exit

After installing the installation needed. Click **【Exit】** to end the installation process.

Because of the possible need to use several installation, so the installation dialog does not automatically exit, until users click button **【Exit】** .

## 1.5 Other matters

1> Before installing the plug-in software, the software that has been articulated should be shut down. After installation, restart the software.

2> The regular version and the DEMO version of the plug-in software is covered by each other.

3> In the default installation path, the normal version and the DEMO version of the independent software and different types of independent software motherboard with each other.

For the same time to install two versions, select the **【Locate install path】** .The regular version and the Demo version should be installed in the different location.

In addition, need to the appropriate software installation location, manually add a desktop shortcut for the software.

4> Modify the information of manufacturers

In the package, in addition to RDCAMSetup, there are four text files.

Info\_Sche、Info\_Tche、Info\_En、Info\_Other, the four files correspond to the software information of manufacturers that be displayed in Simplified Chinese, Traditional Chinese, English and

the custom language. If the four text is modified, manufacturer information also will be installed when the program was installed.

Open the text that should be modify, an example in Simplified Chinese:

0 = Company Name:

1 = ... (Fill in company name here)

And so on, the company information in other languages is the same set.

## Chapter 2 Installing the CorelDraw plugin

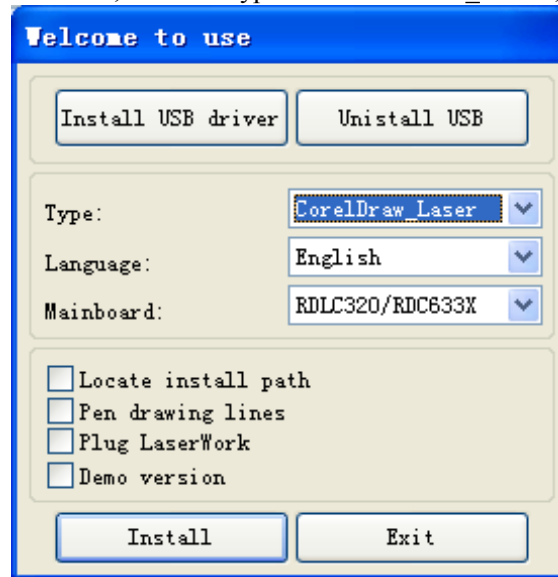
Plug-in software support the version from CorelDraw11 to X5, but some simplified versions of CorelDraw is not supported. Here to the installation of CorelDraw12 as an example to introduce the installation process of plug-in software. If not specified, it is referring to CorelDraw12.

Before installing the plug-in software to run CorelDraw.

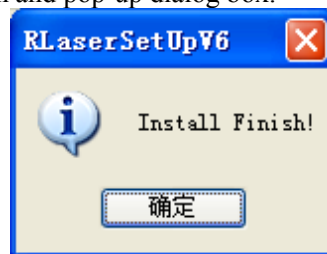
Select **【Tools】** -> **【Option】**

In the pop-up dialog box, select VBA, on the right do not check the “delay load VBA”, then OK, and exit the application CorelDraw.

Run the program of installation, choose “Type” to “CorelDraw\_Laser”, then click **【Install】** .



The installer will automatically install the plug-in software to the all versions of CorelDraw RDCAM that are installed on the operating system and pop-up dialog box.



For some versions of CorelDraw (such as green version) may not automatically navigate to the locate where the CorelDraw is installed on. Only need to check “Locate install path” on the installation software, and then manually browse to navigate the folder location to the root of CorelDraw software where the plug-in program should be installed on.

Exit the installation program, and run CorelDraw.



Toolbar in the CorelDraw interface will appear



If the button does not appear, you should select **【Tools】** -> **【Option】** in the menu.

On the left select the “command bar” and then check “Visual Basic applications”, and select “OK”.



this tool bar will appear in the software, select the first button .

If the toolbar does not appear, reinstall the software CorelDraw.

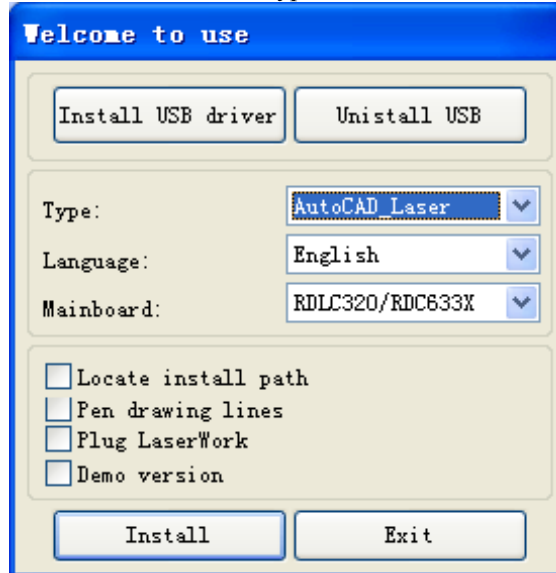
In the “macro location” select “GlobalMacros(Rlaser12V6.gms)”.

And the “Macro name” choose the RlaserV6.UserInit. And then “Run”.

## Chapter 3 Installing the AutoCad plugin

AutoCad plug-ins can be used to AutoCad2004-2010 non-simplified version. Here to the installation of AutoCad2004 as an example to introduce the installation process of plug-in. If not specified, it is referring to AutoCad2004. Close all running AutoCad programs before AutoCad plug-in installed.

Run Setup. Select “AutoCad Laser” as The “Type”, and then click **【Install】**.




Setup will automatically install the RDCAM plug-in software to all versions of AutoCad that were installed on the operating system and pop-up dialog box.



For some versions of AutoCad (such as green version) may not navigate to the locate where the AutoCad was installed on. Only need to check “Locate install path” on the installation software, and then manually browse to navigate the folder location to the root of AutoCad software where the plug-in program should be installed on.

Exit the installation program, and run AutoCad.

Toolbar interface in AutoCad will appear 

If the button does not appear, select **【Tools】** -> **【Macro】** (A)->Macro(M) in the menu.

If you can not find it in the menu, it is because the version of AutoCad may not support the plug-in. Please re-install a full version of AutoCad.

In the pop-up dialog box, select LaserInit, and run.

The plug-in toolbar can occur if you select this option, but when you close AutoCad and then open the AutoCad software again. But also do not see the toolbar. Then it is possible that your computer is infected with

a virus. You must manually to define the boot loader works of AutoCad, or you can re-check for viruses or reinstall the operating system and AutoCad software.

Manual process of loading plug-in as follows, select the menu **【Tools】** ->AutoLISP->加载.

In the dialog box, you should to choose the “Content” button that was under the “Start Group”.

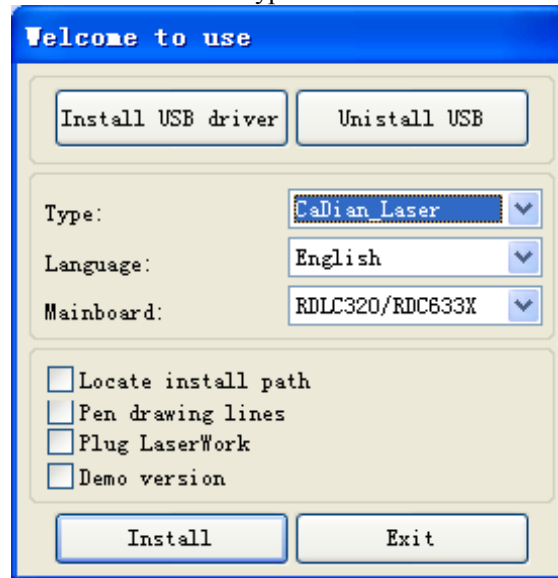
Select “Add” button in the pop-up dialog box. In the AutoCad directory, manually locate and select acad.dvb,acad.lsp. And loading these two files.

Adding the file, close the dialog box, and then close the AutoCad. You can see the plug-in toolbar when you open the AutoCad again.

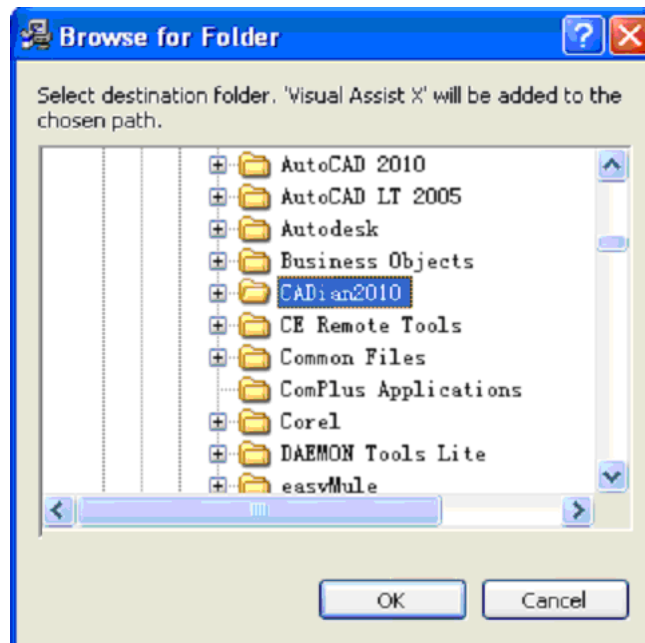
## Chapter 4 Installing the Cadian plugin

Cadian plug-in are now available for the non-simplified of Cadian2010. The other version is not tested. When Cadian was installed, you should close the running Cadian procedures.

Run Setup. Select “CaDian Laser” as the “Type”. And then click **【Install】**.



As CaDian is green software, installation program can not automatically find the installation directory where the need to manually locate the installation path. Select the CaDian installation folder, and click “OK” button.



After installation is complete, the following dialog box appears.

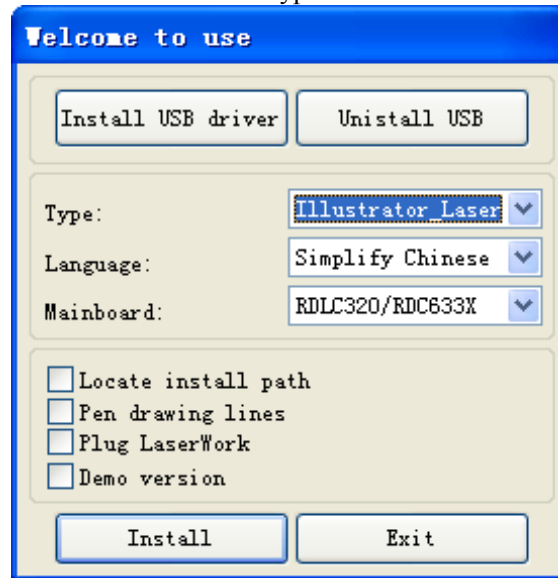


Exit the installation program, and run CaDian.

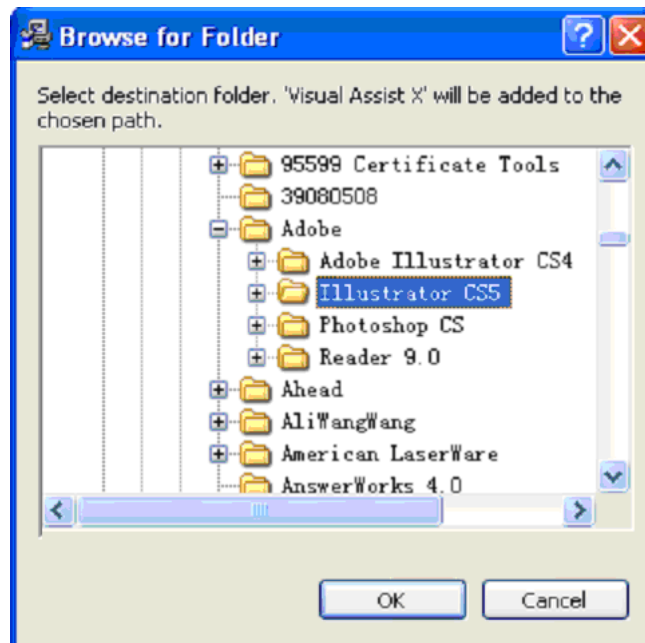
## Chapter 5 Installing the Illustrator plugin

Illustrator plug-in are now available for the non-simplified of Illustrator CS5. The other version is not tested. When Illustrator was installed, you should close the running Illustrator procedures.

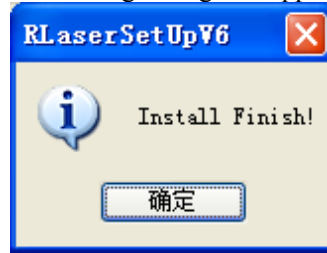
Run Setup. Select “Illustrator Laser” as the “Type”. And then click **【Install】** .



As Illustrator is green software, installation program can not automatically find the installation directory where the need to manually locate the installation path. Select the Illustrator installation folder, and click “OK” button.



After installation is complete, the following dialog box appears.



Exit the installation program, and run Illustrator.

### 3. Operating the machine

There are two safety switches located on the machine to ensure the laser will not fire when operated improperly. One of the safety switches is located in the back of the machine as a water flow switch. The machine WILL NOT fire if water is not flowing through the tube. The second switch is located on the front lid. The lid MUST be closed or the machine will not fire the laser.

### 4. Control Panel



**Pulse**- sends out a pulse of energy to the laser. (holding down = continuous)

**Speed**- adjusts the speed at which the laser head moves back and forth

**Min Power**- sets minimum laser power

**Max Power**- Sets maximum laser power

**File**- opens uploaded file database

**Origin**- Pressing Origin marks your part home.

**Esc**- Escapes out of menu, will send laser head to last set origin.

**Enter**- Enter button

**Frame**- laser head tracks the outline of loaded program.

**Start/Pause**- Starts and pauses program

**Z/U**- Opens list of settings



Pressing Z/U will open the following list of options

Z Axes Move  
Axes Reset+  
Manual Set+  
Laser Set+  
Origin Setup  
Set as Fact Para..(Parameters)  
Default Fact Para..(Parameters)  
Autofocus  
Language+

**Z Axes Move**- Pressing left and right arrows will move table up and down.

**Axes Reset**- Resets the axis of your choice.

**Manual Set**- Sets a specified jogging distance.

**Laser Set**- Sets a specified amount of time when **Pulse** button is pressed.

**Origin Setup**- Sets your part home.

**Set as Fact Parameters**- Sets password on machine.

**Default Fact Parameters**- Resets machine password.

**Autofocus**- Pressing Enter, machine will bring table up to work piece.

**Language**- Sets language

## Laser Tube Installation

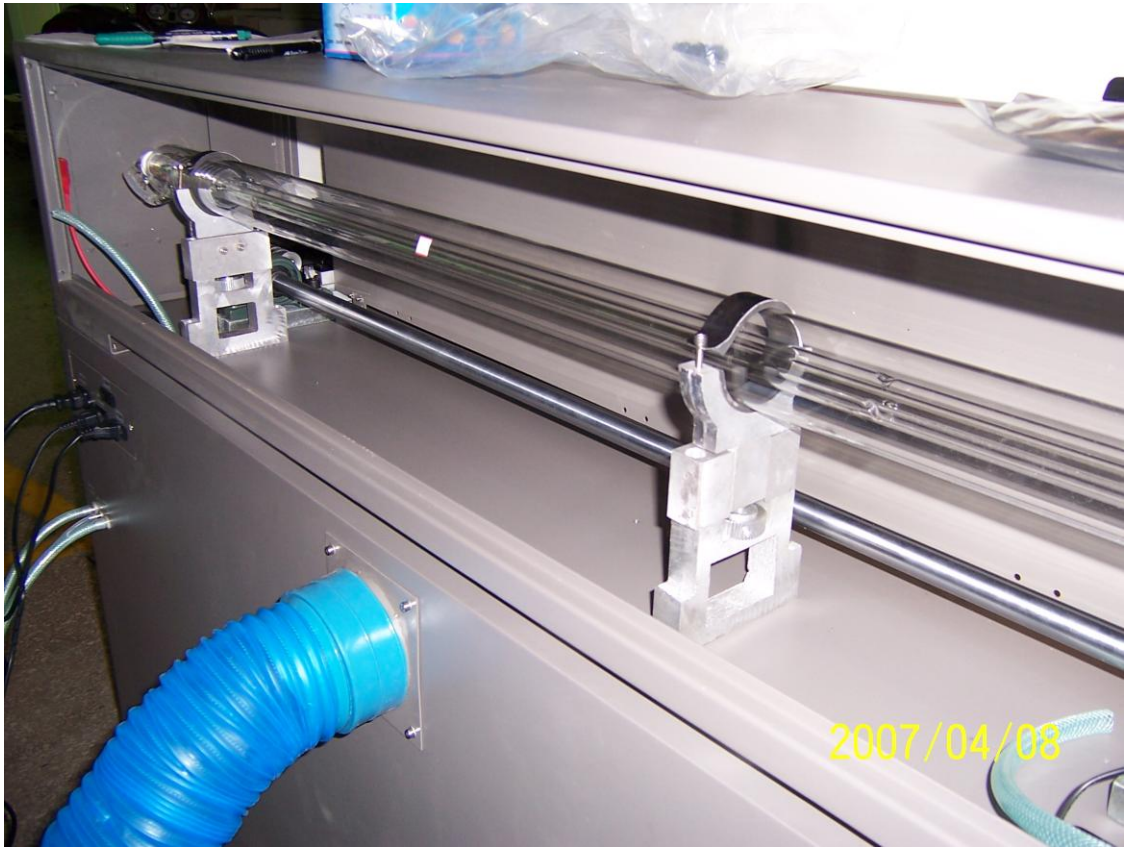


Place the laser tube on two bases.



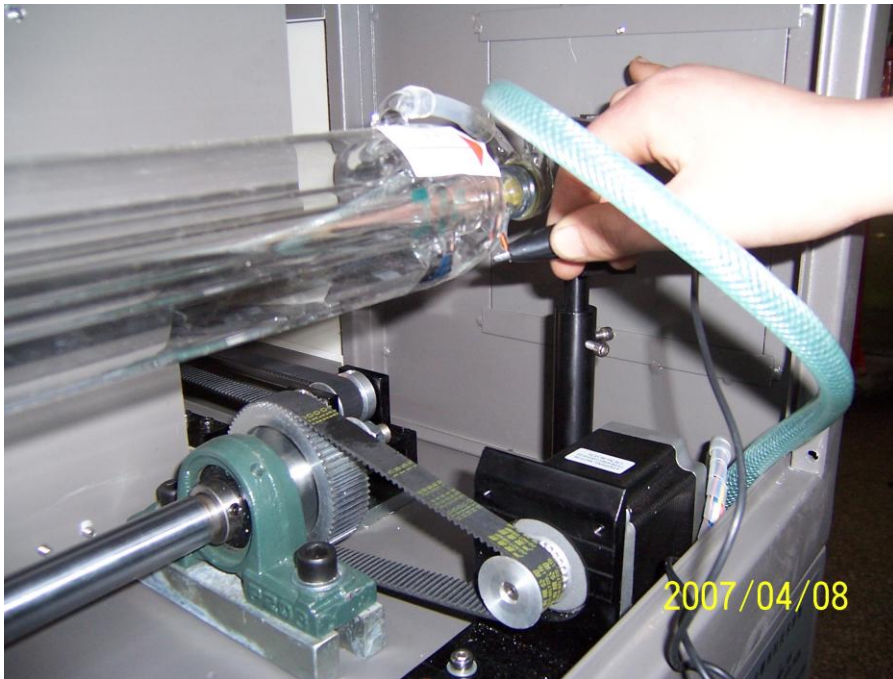
Attention: Light outlet is on the right.

Secure the laser tube.





Plug in water inlet and outlet.



Connect with the anode and cathode of the laser power respectively. Red wire connects to the back of the tube. Black wire connects to the front of the tube.

Turn on machine and water chiller. Water pump will then start to pump water through the tube. Find out whether there are any bubbles in the laser tube after one minute. If so, unsecure the laser tube and rotate tube so the air bubbles can escape easily.

**Attention: Water inlet of the laser tube should be on the lower side of tube, and water outlet be on the upper side of tube. This way water enters from back bottom of tube and exits front top of tube.**

